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EXAMINER	
TORRES, JOSEPH D	

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,605	AMRUTUR ET AL.	
	Examiner	Art Unit	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 34-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 34-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-10 and 34-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites, "the scrambler device scrambles the data bit stream on a group-wise basis to produce scrambled groups of data"... "an ECC encoder device that receives said scrambled groups of data".

In Figure 2 in conjunction with line 22 on page 7 to line13 on page 8 of the Applicant's specification, the Applicant teaches that a single k-bit group of data is received by Scramble 5 in Figure 2, which scrambles the single k bit group of data and that ECC encoder receives the k bit group of scrambled data and encodes the k-bit group of scrambled data by adding r bits of redundancy. Scrambler 5 as Shown in Figure 2 of the Applicant's specification operates on a single k bit group of data at a time. Likewise, ECC Encoder 6 in Figure 2 operates on a single k-bit group of scrambled data at a time.

Nowhere does the Applicant teach an encoder that receives scrambled groups of data that, that is, more than one scrambled group of data, but instead only teaches an encoder capable of receiving single k-bit group of scrambled data at a time generated from a single k bit group of data at a time. Likewise, nowhere does the Applicant teach scrambling "the data bit stream on a group-wise basis to produce scrambled groups of data" since Scrambler 5 as Shown in Figure 2 of the Applicant's specification operates on a single k bit group of data at a time and can not, as shown, operate on more than one k bit group of data at a time.

The Examiner assumes the Applicant intended –the scrambler device scrambles the data bit stream one k-bit group at a time to produce one scrambled k-bit group of data at a time--... --an ECC encoder device that receives one of said scrambled k-bit groups of data at a time--.

Claims 6 recites, "converting, on a group-wise basis, said data bit stream into groups of scrambled data", which suffers from the same problems as in claim 1.

In particular, nowhere does the Applicant teach "converting, on a group-wise basis, said data bit stream into groups of scrambled data" since Scrambler 5 as Shown in Figure 2 of the Applicant's specification operates on a single k bit group of data at a time and can not, as shown, operate on more than one k bit group of data at a time. The Examiner assumes the Applicant intended --converting, one k-bit group at a time, said data bit stream into a single scrambled k-bit group of data at a time--.

Claim 34 recites, "convert, on a group-wise basis, a received bit stream into groups of K scrambled data bits", which suffers from the same problems as in claim 1.
The Examiner assumes the Applicant intended – convert a received bit stream, one k-bit group at a time, into a single k-bit group of scrambled data at a time--.
Claim 34 recites, "an ECC encoder programmed to convert said scrambled data into ECC encoded data", which suffers from the same problems as in claim 1.
The Examiner assumes the Applicant intended --an ECC encoder programmed to convert a single k-bit group of scrambled data at a time into ECC encoded data--.

Claim 35 recites, "the scrambler device scrambles the data bit stream on a group-wise basis into scrambled groups of data"... "an ECC encoder device that receives the scrambled groups of data", which suffers from the same problems as in claim 1.
The Examiner assumes the Applicant intended –the scrambler device scrambles the data bit stream one k-bit group at a time to produce one scrambled k-bit group of data at a time--... --an ECC encoder device that receives one of said scrambled k-bit groups of data at a time--.

Claims 36 recites, "converting, on a group-wise basis, said data bit stream into grouped scrambled data", which suffers from the same problems as in claim 1.
In particular, nowhere does the Applicant teach "converting, on a group-wise basis, said data bit stream into groups of scrambled data" since Scrambler 5 as Shown in Figure 2 of the Applicant's specification operates on a single k bit group of data at a time and can

not, as shown, operate on more than one k bit group of data at a time. The Examiner assumes the Applicant intended --converting, one k-bit group at a time, said data bit stream into a single scrambled k-bit group of data at a time--.

Claims 37 recites, "convert, on a group-wise basis, a source encoded data bit stream into grouped scrambled data", which suffers from the same problems as in claim 1. The Examiner assumes the Applicant intended --converting, one k-bit group at a time, said data bit stream into a single scrambled k-bit group of data at a time--.

Claim 1 recites, "said ECC-encoded data comprises **ECC redundant code that comprises** implicit frame alignment information" [Emphasis Added], which is not taught anywhere in the specification.
The Examiner assumes the Applicant intended --redundant code bits implicitly include frame alignment information or a frame alignment marker--.

Claim 6 recites, "said ECC-encoded data comprises **ECC redundant code that comprises** implicit frame alignment information" [Emphasis Added], which is not taught anywhere in the specification.
The Examiner assumes the Applicant intended --redundant code bits implicitly include frame alignment information or a frame alignment marker--.

Claims 34-37 recite, "said ECC-encoded data comprises **ECC redundant code that comprises** implicit frame alignment information" [Emphasis Added], which is not taught anywhere in the specification.

The Examiner assumes the Applicant intended --redundant code bits implicitly include frame alignment information or a frame alignment marker--.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-10, 36 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "said scrambled data" in line 8. There is insufficient antecedent basis for this limitation in the claim. It is not clear what portions or portions of the groups of scrambled data that "said scrambled data" refers to.

Claim 36 recites the limitation "said scrambled data" in line 6. There is insufficient antecedent basis for this limitation in the claim. It is not clear what portions or portions of the grouped scrambled data that "said scrambled data" refers to.

Claim 37 recites the limitation "said scrambled data" in line 4. There is insufficient antecedent basis for this limitation in the claim. It is not clear what portions or portions of the grouped scrambled data that "said scrambled data" refers to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 34, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) in view of Gherardi; Bernard (US 4943985 A).

35 U.S.C. 103(a) rejection of claims 1, 34, 35 and 37.

Kumar teaches Scrambler 102 in Figure 9 of Kumar for receiving source encoded messages each message comprising a group of k bits and scrambling messages of length k one at a time to produce scrambled k-bit messages one at a time. Col. 7, lines 4-11 in Kumar teach that random scrambling is used to randomly distribute bits with in a message. ECC Encoder 38 in Figure 9 of Kumar is a Block encoder which can only

receive a one scrambled message block of length k at a time from Scrambler 102 to add r bits of redundancy producing an encoded message block of length k+r.

However Kumar does not explicitly teach the specific use of frame alignment information or a frame alignment marker implicitly included redundant code bits.

Gherardi, in an analogous art, teaches use of frame alignment information or a frame alignment marker implicitly included redundant code bits (col. 1, line 63 to col. 2, line 4 in Gherardi teach the use of error rate detected by means of a block code for verifying frame synchronization; error rate is frame alignment information implicitly included redundant code bits).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Gherardi by including use of frame alignment information or a frame alignment marker implicitly included redundant code bits. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of frame alignment information or a frame alignment marker implicitly included redundant code bits would have provided verification of frame alignment.

4. Claims 2, 6-8 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) and Gherardi; Bernard (US 4943985 A) in view of Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam).

35 U.S.C. 103(a) rejection of claim 2.

Kumar and Gherardi substantially teaches the claimed invention described in claim 1 (as rejected above).

However Kumar and Gherardi does not explicitly teach the specific use of a serializer nor the frame alignment details required in any system for synchronization.

Adam, in an analogous art, teaches Serializer 108 in Figurer 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar and Gherardi with the teachings of Adam by including use of a serializer. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a serializer would have provided a means for communicating on a serial link.

35 U.S.C. 103(a) rejection of claims 6 and 36.

Kumar teaches Scrambler 102 in Figure 9 of Kumar for receiving source encoded messages each message comprising a group of k bits and scrambling messages of length k one at a time to produce scrambled k-bit messages one at a time. Col. 7, lines 4-11 in Kumar teach that random scrambling is used to randomly distribute bits with in a message. ECC Encoder 38 in Figure 9 of Kumar is a Block encoder which can only receive a one scrambled message block of length k at a time from Scrambler 102 to add r bits of redundancy producing an encoded message block of length k+r.

However Kumar does not explicitly teach the specific use of frame alignment information or a frame alignment marker implicitly included redundant code bits.

Gherardi, in an analogous art, teaches use of frame alignment information or a frame alignment marker implicitly included redundant code bits (col. 1, line 63 to col. 2, line 4 in Gherardi teach the use of error rate detected by means of a block code for verifying frame synchronization; error rate is frame alignment information implicitly included redundant code bits).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Gherardi by including use of frame alignment information or a frame alignment marker implicitly included redundant code bits. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of frame alignment information or a frame alignment marker

implicitly included redundant code bits would have provided verification of frame alignment.

However Kumar and Gherardi does not explicitly teach the specific use of other bits. Adam, in an analogous art, teaches use of other bits (K1', K2', and K3' in Step 304 of Figure 3 are).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar and Gherardi with the teachings of Adam by including use of other bits. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of other bits would have provided error protection for control bits as well as data bits.

35 U.S.C. 103(a) rejection of claims 7 and 8.

Adam teaches Serializer 108 in Figurer 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in

Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

5. Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A), Gherardi; Bernard (US 4943985 A) and Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) in view of Kimmitt; Myles (US 6738935 B1).

35 U.S.C. 103(a) rejection of claims 3.

Kumar, Gherardi and Adam substantially teaches the claimed invention described in claims 1 and 2 (as rejected above). In addition, Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Kumar, Gherardi and Adam does not explicitly teach the specific use of error indications.

Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar, Gherardi and Adam with the teachings of Kimmitt by including use of error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 4.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 9.

Kumar, Gherardi and Adam substantially teaches the claimed invention described in claims 6 and 7 (as rejected above). Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data

into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Kumar, Gherardi and Adam does not explicitly teach the specific use of error indications.

Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar, Gherardi and Adam with the teachings of Kimmitt by including use of error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 10.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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